

**Notice of Allowability**

Application No.

10/667,483

Examiner

R. James Balls

Applicant(s)

KAGAWA ET AL.

Art Unit

1625

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 9/7/2006.
2. ☒ The allowed claim(s) is/are 9-11 and 13-14, 26, 28-30
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☒ All b) ☐ Some\* c) ☐ None of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_


Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  5. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),  
Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413),  
Paper No./Mail Date 10/5/2006
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

  
Celia Chang  
Primary Examiner  
Art Unit 1625

### DETAILED ACTION

1. Claims 9-14 and 26-30 are pending.
2. This application claims benefit of foreign applications JAPAN 2002-279147 filed on September 25, 2002, JAPAN 2002-279148 filed on September 25, 2002 and JAPAN 2002-311302 filed on October 25, 2002.

### *Examiner's Amendment*

#### 3. AMENDMENTS TO THE SPECIFICATION

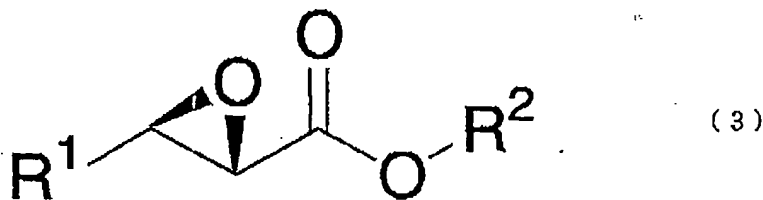
Please delete the paragraph beginning on page 41, lines 6-11, as follows:

~~Further, in the present invention, by replacing (R)-1,1'-bi-2-naphthol used as a catalyst component in the asymmetric oxidation reaction by (S)-1,1'-bi-2-naphthol, it will be possible to prepare a (2R,3S) form which is optically symmetrical to the compound of the present invention.~~

#### AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

- 1.-8. (Canceled).
9. (Currently Amended) An optically active epoxyster derivative ~~in the (2S,3R) or (2R,3S) form~~ of the following formula (3):



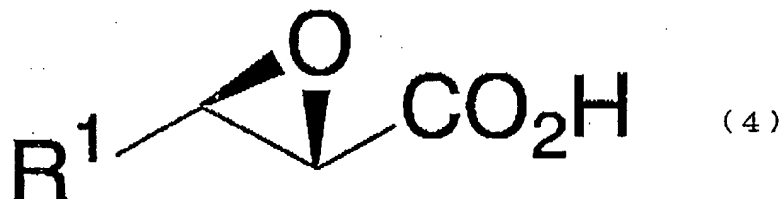
wherein  $R^1$  is a methyl group, an ethyl group or a  $C_{3-10}$  branched, linear or cyclic alkyl group, and  $R^2$  is a phenyl group, a substituted phenyl group or a tert-butyl group, wherein the optical conformation of formula (3) is (2S,3R).

10. (Original) The optically active epoxyster derivative according to Claim 9, wherein in the formula (3),  $R^1$  is a cyclohexyl group, an isopropyl group or a n-butyl group.

11. (Original) The optically active epoxyster derivative according to Claim 9, wherein in the formula (3),  $R^2$  is a phenyl group, a 4-methoxyphenyl group or a tert-butyl group.

12. (Canceled).

13. (Withdrawn/Currently Amended) A process for producing an optically active (2S,3R)-2,3-epoxypropionic acid derivative having a substituent at the 3-position, of the following formula (4):

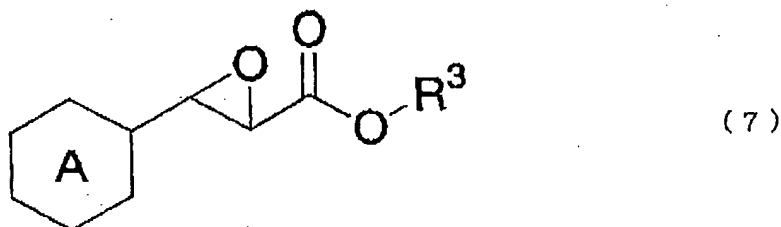


wherein  $R^1$  is a methyl group, an ethyl group or a  $C_{3-10}$  branched, linear or cyclic alkyl group, which process comprises hydrolyzing the optically active epoxyster derivative of the formula (3) as defined in Claim 9.

14. (Withdrawn) The process for producing an optically active (2S,3R)-2,3-epoxypropionic acid derivative according to Claim 13, wherein in the formula (4),  $R^1$  is a cyclohexyl group, an isopropyl group or a n-butyl group.

15.-25. (Canceled).

26. (Withdrawn) A process for producing an optically active 2,3-epoxy-3-cyclohexylpropionic acid and its ester, which comprises reacting an enzyme having an ability to asymmetrically hydrolyze an ester bond, to a mixture of a (2R,3S)-2,3-epoxy-3-cyclohexylpropionate and a (2S,3R)-2,3-epoxy-3-cyclohexylpropionate, of the 2,3-epoxy-3-cyclohexylpropionate of the following formula (7):



wherein ring A is a cyclohexyl group which may have a substituent, and R<sup>3</sup> is an ester residue, for stereoselective hydrolysis, followed by separation and purification.

27. (Canceled).

28. (Withdrawn) The process for producing an optically active 2,3-epoxy-3-cyclohexylpropionic acid and its ester according to Claim 26, wherein the enzyme is a lipase or an esterase.

29. (Withdrawn) The process for producing an optically active 2,3-epoxy-3-cyclohexylpropionic acid and its ester according to Claim 26, wherein an enzyme which selectively hydrolyzes a (2S,3R)-2,3-epoxy-3-cyclohexylpropionate, is used, whereby from the aqueous phase, a (2R,3S)-2,3-epoxy-3-cyclohexylpropionic acid is obtained, and from the organic solvent phase, a (2S,3R)-2,3-epoxy-3-cyclohexylpropionate is obtained.

30. (Withdrawn) The process for producing an optically active 2,3-epoxy-3-cyclohexylpropionic acid and its ester according to Claim 26, wherein an enzyme which selectively hydrolyzes a (2R,3S)-2,3-epoxy-3-cyclohexylpropionate, is used, whereby from the aqueous phase, a (2R,3S)-2,3-epoxy-3-cyclohexylpropionic acid is obtained, and from the organic solvent phase, a (2S,3R)-2,3-epoxy-3-cyclohexylpropionate is obtained.

***Reasons for Allowance***

4. The instant claims are distinguishable over the prior art. Baures et al., *An Efficient Asymmetric Synthesis of Substituted Phenyl Glycidic Esters*, TETRAHEDRON LETTERS, 31(45):6501-6504 (1990) discloses similar epoxypropionate derivatives. However, the Baures et al. compounds differ in at least two ways. First, the stereochemistry of the epoxypropionate is different and second, the ring in the R1 position is phenyl whereas the instant claims allow for a cyclic alkyl group. Motivation to arrive at the instant compounds is lacking. Tanaka et al., (U.S. Patent No. 6,787,657) is assigned to the same assignee as the instant application and contains similar epoxypropionate derivatives. However, compounds disclosed therein differ in at least three ways. First, the Tanaka et al. compounds are not stereospecific. Second, they have a phenyl in the R1 position whereas the instant claims allow for a cyclic alkyl group. The claims of Tanaka et al. require a halogen substitute the R1 phenyl whereas the instant claims do not contain such requirement. Therefore, motivation to arrive at the instant compounds is lacking.

***Rejoinder***

5. Claims 13-14, 26 and 28-30 were subject to restriction as set forth in the December 6, 2005 Requirement for Restriction. The claims are drawn to a process of producing the compounds claimed in Claims 9-11. The requirement for restriction between the compounds of Claims 13-14 and the method of producing those compounds set forth in Claims 13-14, 26 and 28-30 is hereby withdrawn and the method claims are rejoined.


***Conclusion***

6. Claims 9-11, 13-14, 26 and 28-30 are allowable.
7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to R. James Balls whose telephone number is (571) 272-7997. The examiner can normally be reached on Mon - Fri 8:00am - 4:30pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom McKenzie can be reached on (571) 272-0670. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

R. James Balls  
October 11, 2006

  
Celia Chang  
Primary Examiner  
Art Unit 1625